The Office Action rejects claims 1 and 3-20 under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 6,531,997 to Gates et al. ("Gates") in view of Japanese Patent No. 64-86116 A to Inoue et al. ("Inoue"). This rejection is respectfully traversed.

Independent claim 1 recites an image display device that includes, among other features, a voltage applying component by which a voltage is applied . . . which triggers particle movement, and a voltage is applied . . . which is smaller than the potential difference which triggers particle movement, thereby inhibiting a movement of particles at least one of towards and away from an electrode not selected to contribute to the image display, wherein the voltage applying component applies a voltage to the display side electrodes and the rear side electrodes such that a potential difference between the display side electrodes contributing to image display and the display side electrodes not contributing to the image display is smaller than a potential difference between the rear side electrodes contributing to the image display and the rear side electrodes not contributing to the image display, thereby further inhibiting a movement of particles between the display side electrodes contributing to image display and the display side electrodes not contributing to the image display.

Support for the above feature may be found throughout the original specification and drawings. For example, specific support may be found at least at page 24, line 5 through page 25, line 12; page 26, line 17 through page 27, line 15; page 28, lines 8-19 and page 29, line 5 through page 30, line 22.

The Office action asserts that Gates teaches all of the features of claim 1. For example, the Office Action asserts that Gates discloses the features of claim 1 addressed above at col. 19, lines 33-45, col. 26, lines 40-65 and col. 27, lines 1-10, with respect to Fig. 3F and Fig. 9A. However, the text cited appears to be unrelated to the claimed feature.

Instead, the passages by the Office Action appear to relate to an approach for reducing the effects of damaging field strengths in an electrophoretic display. For example, Gates

teaches a method for addressing electrophoretic displays that minimizes the integral amplitude of the addressing signals over time. See Gates at col. 2, lines 1-10; col. 2, lines 34-38; col. 3, lines 8-20; col. 3, lines 34-44; and col. 5, lines 15-21. However, nowhere in the passages from Gates cited by the Office Action, nor anywhere else, does Gates teach or suggest reducing the potential difference between the display side electrodes contributing to the image display and the display side electrodes not contributing to the image display to inhibit movement of particles between the display side electrodes contributing to image display and the display side electrodes not contributing to the image display, as described in the original specification at least at page 33, line 21 through page 34, line 8, with respect to Fig. 12, and as recited in the claims. Further, we do not believe that the approach described in Gates for reducing the effects of damaging field strengths in an electrophoretic display inherently results the control of display side and rear side electrode voltages, as recited in the claims.

As discussed during the November 22 interview, the present claims recite "inhibiting a movement of particles between the display side electrodes <u>contributing to</u> image display and the display side electrodes <u>not contributing to</u> the image display" (emphasis added). For examples from the specification regarding the meaning of the phrases "contributing to" and "not contributing to," please see the original specification at page 30, line 14 through page 31, line 8; page 34, line 24 through page 35, line 25; and Figs. 6 and 12. Nowhere does Gates teach or suggest such a purpose.

For example, as stated by Gates at col. 1, lines 14-15, Gates "relates to electronic displays and, in particular, to reducing the rate of deterioration of display material in such displays." For example, Gates asserts at col. 2, lines 1-10, that a primary cause of such deterioration are the strong electric field, as high one million volts per meter or one hundred thousand volts per meter, respectively. As described in Gates at col. 28, lines 1-16, Gates

seeks to reduce damaging electric fields by reducing the time integral of the fields applied to a portion of a screen to zeros.

Gates seeks to meet this objective by, as described at col. 19, lines 33-45, applying a series of pulses that are insufficient intensity to cause movement of particles within a cell, but which may be used to reduce the time integral of the potential placed across a display element.

Nowhere does Gates teach or suggest that the techniques described therein may be used to inhibit a movement of particles between the display side electrodes contributing to image display and the display side electrodes not contributing to the image display, as recited in the claims.

In contrast, the present application at page 24, line 5 through page 25, line 11, describing the following example:

> a potential difference between the electrodes 403A which contribute to the image display and the electrodes 404B which do not contribute to the image display, a potential difference between the electrodes 403A which do not contribute to the image display and the electrodes 404B which contribute to the image display, and a potential difference between the electrodes 403A which do not contribute to the image display and the electrodes 404B which do not contribute to the image display are controlled by the sequencer 406 such that the differences are respectively smaller than a threshold potential difference V_{th} that triggers movements of the black particles 18 and the white particles 20. Namely, a voltage is also applied to the row and column electrodes which do not contribute to the image display.
>
> By this applied voltage, particles can be prevented from moving at a position where the particles need not to move, and the display pixels are prevented from expanding, whereby an image can be displayed at high resolution.
>
> Among the column and row electrodes which do not contribute to the image display, a voltage can be applied simply to the row electrode 404B which does not contribute to the image display. In this case, since the voltage to be applied to the row electrode 404B which does not contribute to the image display is approached to the voltage to be applied to the column electrode 403A which contributes to the image display, the

> potential difference between the row electrodes 404B which do not contribute to the image display and the column electrodes 403A which contribute to the image display can be further decreased, whereby particles can be prevented more reliably from moving at a position where they are not expected to move.

Further, the present application at page at page 26, line 17 through page 27, gives the example of potentials E1, E2, E3 and E4, which may arise between cells contributing to or not contributing to a display. Specifically, the application states:

> For example, field E_1 which is applied between the column electrode which contributes to the display driving and the row electrode which contributes to the display driving, and an electric field E_2 which is applied between the column electrode which does not contribute to the display driving and the row electrode which contributes to the display driving are represented by the following equations:
>
> $$E_1 = (V_{A+} - V_{B+})/d \qquad (1)$$
> $$E_2 = (V_{A-} - V_{B+})/d \qquad (2)$$
>
> Further, the potential V_{B-} is generated at the row electrode 404B which does not contribute to the display driving, and the potential V_{A-} or V_{A+} is generated at the column electrode 403A in accordance with a display content of the column electrode which contributes to the display driving. Here, an electric field E_3 applied between the column electrode which contributes to the display driving and the row electrode which does not contribute to the display driving, and an electric field E_4 applied between the column electrode which does not contribute to the display driving and the row electrode which does not contribute to the display driving are represented by the following equations:
>
> $$E_3 = (V_{A+} - V_{B-})/d \qquad (3)$$
> $$E_4 = (V_{A-} - V_{B-})/d \qquad (4)$$

Further, at page 29, line 5 through page 30, line 22 the present application describes an example of how to manage/apply voltages cells so that higher in order to improve screen resolutions. Specifically:

> Therefore, a driving voltage which is able to drive particles for each row electrode is applied sequentially by the scanning signal to each of the electrodes $404B_1$ to $404B_n$. Further, in accordance with

the image signal, being synchronized with the scanning signal, a driving voltage is applied to the electrodes $403A_1$ to $403A_n$. Namely, being synchronized with the scanning signal, the driving voltage is applied to all of the column electrodes that contain pixel positions to which the particles are to be moved. Accordingly, an electric field capable of moving the particles between the electrode 403A and the electrode 404B at the pixel positions at which the particles are expected to move is generated, the particles are moved, and an image is displayed.

Here, in addition to the row electrodes 404B to which the scanning signal is input and which contribute to image display, and the column electrodes 403A which contribute to the image display, a voltage is also applied to the row electrodes 404B to which the scanning signal is not input and those which do not contribute to the image display, and the column electrodes 403A which do not contribute to the image display. That is, a potential difference between the electrode 403A which contributes to the image display and the electrode 404B which does not contribute to the image display, a potential difference between the electrode 403A which does not contribute to the image display and the electrode 404B which contributes to the image display, and a potential difference between the electrode 403A which does not contribute to the image display and the electrode 404B which does not contribute to the image display are respectively smaller than a threshold potential difference V_{th} at which the black particles 18 and the white particles 20 begin to move.

As a result, particles can be prevented from moving at a position where particles need not to move, and image pixels to be displayed can be prevented from expanding so that an image can be displayed at high resolution.

A voltage can be applied simply to the row electrode 404B which does not contribute to the image display. Accordingly, since the voltage to be applied to the row electrode 404B which does not contribute to the image display is approached to the voltage to be applied to the column electrode 403A which contributes to the image display, the potential difference between the row electrode 404B which does not contribute to the image display and the column electrode 403A which contributes to the image display can be further decreased, whereby particles can be prevented more reliably from moving at a position where they are not expected to move.

In the example described in the present application at least at page 24, lines 23 through page 25, line 1, by applying such voltages, particles can be prevented from moving at

a position where the particles need not to move, and the display pixels are prevented from expanding, whereby an image can be displayed at high resolution.

Nowhere does Gates teach or suggest such a feature. For example, Gates as addressed at col. 26, lines 40-64, with respect to Figs. 9A and 9B, teaches only applying voltages based upon whether a change position or no change of position of a particle is desired. For example, at col. 26, lines 60-64, Gates states that because an electrophoretic display is bistable, after the field has been applied for the time necessary to move the particles from one of the positions shown in FIG. 9A to the other, the field can be removed since the electrophoretic medium is essentially bistable.

* * * *

Inoue fails to overcome the above-described deficiency of Gates with respect to claim 1. Therefore, the asserted combination of Gates and Inoue does not teach or suggest the combinations of features recited in claim 1.

For at least the above reasons, the applied prior art references cannot reasonably be construed to teach or suggest the combination of features recited in claim 1.

Claims 7, 13 and 17 include features similar to claim 1 and, therefore, the applied prior art references cannot reasonably be construed to teach or suggest the combination of features recited in claims 7, 13 and 17 for at least the reasons addressed above with respect to claim 1. Claims 1, 3-6, 8-12, 14-16 and 18-20 depend from claims 1, 7, 13 and 17 and, therefore, the applied prior art references cannot reasonably be construed to teach or suggest the combinations of features recited in claims 3-6, 8-12, 14-16 and 18-20 for at least the reasons addressed above with respect to claims 1, 7, 13 and 17 , as well as the additional features that each of claims 1, 3-6, 8-12, 14-16 and 18-20 recite.

Accordingly, reconsideration and withdrawal of the rejection of claims 1 and 3-20 under 35 U.S.C. §103(a) as unpatentable over Gates in view of Inoue are respectfully requested.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1 and 3-20 are earnestly solicited.

Should the Examiner believe that anything further would be desirable to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

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